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PATENT
Attorney Docket No. 401188/FUKAMI

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

MISUMI et al.

Application No. 09/848,256

Art Unit: 2827

Filed: May 4, 2001

Examiner: L. Thai

For: SEALED SEMICONDUCTOR DEVICE
AND LEAD FRAME USED FOR THE
SAME

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RESPONSE TO OFFICE ACTION

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In response to the Office Action mailed May 6, 2002 and to the Advisory Action mailed August 9, 2002, please enter the following amendments and consider the following remarks.

AMENDMENTS

IN THE CLAIMS:

Replace the indicated claims with:

21. (Twice Amended) A sealed semiconductor device comprising:
- a semiconductor chip;
 - a lead frame including internal leads extending across part of and spaced from a surface of said semiconductor chip; and
 - a tape including four tape members located at respective corners of said semiconductor chip, between said semiconductor chip and some of said internal leads holding said semiconductor chip and said internal leads at a fixed distance from each other, each of said tape members having a first surface to which some of said internal leads are bonded and fixed, and a second surface, not fixed to the surface of said semiconductor chip, only a

portion of the second surface of each of said tape members contacting the surface of said semiconductor chip.

D¹
22. (Twice Amended) A lead frame and tape for a sealed semiconductor device having a rectangular semiconductor chip sealed within an encapsulating resin, said lead frame and tape comprising:

internal leads extending toward and electrically connected with wires to respective pads located approximately along a central axis of the semiconductor chip; and

a tape including four tape members, each tape member having a first surface to which some of said internal leads are fixed, each of said tape members being arranged at a respective corner of the semiconductor chip so that a portion of a second surface of each of said tape members contacts a surface of the semiconductor chip when the semiconductor chip is sealed within the encapsulating resin.

Add the following claims:

D²
23. (New) The sealed semiconductor device according to claim 21, wherein each of said tape members is disposed on the surface of said semiconductor chip so that a portion of each tape member protrudes beyond at least one edge of the surface of said semiconductor chip.

24. (New) The lead frame and tape for a sealed semiconductor device according to claim 22, wherein each of said tape members is disposed on the surface of the semiconductor chip so that a portion of each tape member protrudes beyond at least one edge of the surface of the semiconductor chip.

REMARKS

In response to the Official Action mailed May 6, 2002 and to the Advisory Action mailed August 9, 2002, Applicants request continued prosecution, further amend their application, and request reconsideration. The Amendment after final rejection is now entered as well as the Amendment accompanying the attached Request for Continued Examination. These Amendments cancel claims 4-9 and 16 and add claims 23 and 24 so claims 10, 11, and 17-24 are now pending.

An Information Disclosure Statement is being filed simultaneously, supplying a reference cited in the prosecution of a corresponding patent application in a foreign patent office.

The remarks accompanying the Amendment filed July 25, 2002 are renewed. The additional amendments to claims 21 and 22 and the additional claims 23 and 24 are fully supported by the application as filed. For example, in the embodiment of the invention illustrated in a cross-sectional side view in Figure 1 and in a partial plan view in Figure 2, there are four tape members 8. While these tape members 8 are adhered to parts of the internal leads 2a, they are not bonded to the semiconductor chip 1. Moreover, as most easily seen in Figure 1, but as also illustrated in Figure 2, each of the tape members 8 overhangs an edge of the semiconductor chip.

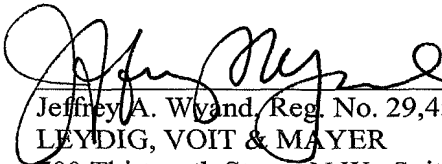
As explained in the patent application at page 10, the overhanging arrangement of the tape members provides a beneficial result. The tape members may absorb moisture. Therefore, when resin encapsulation is carried out in forming the resin body 6, the moisture attempts to escape from the tape due to the increased temperature of the molding process. By placing the tape members as illustrated and described in the patent application, a larger proportion of the surface area of each tape member is exposed than in prior art structures in which all of the tape overlies and is in contact with, at one surface, the semiconductor chip. Thus, because the release of moisture is related to the exposed surface area of a tape member, the moisture can be more quickly and efficiently evaporated from each overhanging tape member during the molding process than in a structure in which all of the tape is on the chip surface. Therefore, a significant advantage is achieved by the arrangement of the tape members in the structures claimed in claims 20-24. Put another way, the structure as defined by those claims is clearly different and provides an advantage over prior art structures. Therefore, claims 20-22 are clearly allowable over the prior art for the reasons previously submitted and newly submitted here.

With regard to the other pending claims, claims 10, 11, and 17-19, Applicants continue to assert that those claims are patentable over the prior art previously cited for the reasons provided in the Amendment filed July 25, 2002.

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Application No. 09/848,256

Prompt and favorable Action on all pending claims is earnestly solicited.

Respectfully submitted,


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Date: Sept 5, 2002
JAW:ves



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For: SEALED SEMICONDUCTOR
DEVICE AND LEAD FRAME USED
FOR THE SAME

AMENDMENTS TO SPECIFICATION, CLAIMS, AND ABSTRACT
MADE IN RESPONSE TO OFFICE ACTION DATED MAY 6, 2002

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Amendments to existing claims:

21. (Twice Amended) A sealed semiconductor device comprising:
a semiconductor chip;
a lead frame including internal leads extending across part of and spaced from a surface of said semiconductor chip; and
a ~~tape-member~~ including four tape members located at respective corners of said semiconductor chip, between said semiconductor chip and some of said internal leads to hold
holding said semiconductor chip and said internal leads at a fixed distance from each other,
each of said tape-member members having a first surface to which some of said internal leads
are entirely bonded and fixed, and a second surface, not fixed to but contacting the surface of
said semiconductor chip, only a portion of the second surface of each of said tape members
contacting the surface of said semiconductor chip.

22. (Twice Amended) A lead frame and tape for a sealed semiconductor device having a rectangular semiconductor chip sealed within an encapsulating resin, ~~the said~~ lead frame and tape comprising:

internal leads extending toward and electrically connected with wires to respective pads located approximately along a central axis of the semiconductor chip; and

a tape including four tape members, each tape member having a first surface to which some of said internal leads are fixed, each of said tape members being arranged at a

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respective corner of the semiconductor chip so that a portion of a second surface of each of said tape members contacts a surface of the semiconductor chip when the semiconductor chip is sealed within the encapsulating resin.

Add the following claims:

23. (New) The sealed semiconductor device according to claim 21, wherein each of said tape members is disposed on the surface of said semiconductor chip so that a portion of each tape member protrudes beyond at least one edge of the surface of said semiconductor chip.

24. (New) The lead frame and tape for a sealed semiconductor device according to claim 22, wherein each of said tape members is disposed on the surface of the semiconductor chip so that a portion of each tape member protrudes beyond at least one edge of the surface of the semiconductor chip.